1. A clay-polymer nanocomposite comprising an organoclay which has been exfoliated into a polymer matrix, the organoclay being the reaction product of a smectite clay with a quaternary onium compound mixture, wherein the quaternary onium compound mixture comprises a diester quaternary ammonium compound mixed with an additional quaternary ammonium compound, wherein the additional quaternary ammonium compound comprises a triester quaternary ammonium compound, a monoester quaternary ammonium compound, or mixtures thereof.

4. The nanocomposite of claim 1, wherein the diester quaternary ammonium compound is present as greater than 55 wt% of the quaternary onium compound mixture.

5. The nanocomposite of claim 1, wherein the additional quaternary ammonium compound is a triester quaternary ammonium compound and wherein the triester quaternary ammonium compound comprises less than ~~about~~ 25 wt.% of the quaternary onium compound mixture.

6. The nanocomposite of claim 1, wherein the fatty acids corresponding to the esters of the diester quaternary ammonium compound and the additional quaternary ammonium compound have a degree of unsaturation such that the iodine value is from about 20 to about 90.

7. The nanocomposite of claim 1, wherein the additional quaternary ammonium compound is a triester quaternary ammonium compound, and wherein the diester quaternary ammonium compound comprises greater than ~~about~~ 60 wt.% of the quaternary onium mixtures, the triester quaternary ammonium compound comprises less than ~~about~~ 20 wt.% of the quaternary onium mixture, and wherein the fatty acids corresponding to the esters in the diester quaternary ammonium compound and the additional quaternary ammonium compound have a degree of unsaturation such that the iodine value is from about 30 to about 70.

8. The nanocomposite of claim 1, wherein the additional quaternary ammonium compound is a triester quaternary ammonium compound, and wherein the diester quaternary ammonium compound comprises greater than ~~about~~ 62 wt% of the quaternary onium mixture, the triester quaternary ammonium compound comprises less than ~~about~~ 17 wt% of the quaternary onium

mixture and wherein the fatty acids corresponding to the esters in the diester quaternary ammonium compound, and wherein the additional quaternary ammonium compound have a degree of unsaturation such that the iodine value is from about 40 to about 60.

9. The nanocomposite of claim 1, wherein the additional quaternary ammonium compound is a triester quaternary ammonium compound and wherein the diester quaternary ammonium compound comprises greater than ~~about~~ 62 wt.% of the quaternary onium mixture, the triester quaternary ammonium compound comprises less than ~~about~~ 17 wt.% of the quaternary onium mixture, and wherein the fatty acids corresponding to the esters in the diester quaternary ammonium compound and the additional quaternary ammonium compound have a degree of unsaturation such that the iodine value of the fatty acids is from about 45 to about 58.

10. An organoclay comprising the reaction product of a smectite clay with a quaternary onium compound mixture wherein the quaternary onium compound mixture comprises a diester quaternary ammonium compound mixed with an additional quaternary ammonium compound, wherein the additional quaternary ammonium compound comprises a triester quaternary ammonium compound, a monoester quaternary ammonium compound, or mixtures thereof.

12. The organoclay composition of claim 10, wherein the diester quaternary compound comprises greater than ~~about~~ 55 wt.% of the quaternary mixture.

13. The organoclay composition of claim 12, wherein the additional quaternary ammonium compound is a triester quaternary ammonium compound, and wherein the triester quaternary ammonium compound comprises less than ~~about~~ 25 wt% of the quaternary onium mixture.

15. The organoclay composition of claim 10, wherein the fatty acids corresponding to the esters in the diester quaternary ammonium compound and the additional quaternary ammonium compound have a degree of unsaturation such that the iodine value is from about 20 to about 90.

16. The organoclay composition of claim 10, wherein the additional quaternary ammonium compound is a triester quaternary ammonium compound, and wherein the diester quaternary

ammonium compound comprises greater than ~~about~~ 60 wt.% of the quaternary onium mixture, the triester quaternary ammonium compound comprises less than ~~about~~ 20 wt.% of the quaternary onium mixture, and wherein the fatty acids corresponding to the esters in the diester quaternary ammonium compound and the additional quaternary ammonium compound have a degree of unsaturation such that the iodine value is from about 30 to about 70.

17. The organoclay composition of claim 10, wherein the additional quaternary ammonium compound is a triester quaternary ammonium compound, and wherein the diester quaternary ammonium compound comprises greater than ~~about~~ 62 wt.% of the quaternary onium mixture, the triester quaternary ammonium compound comprises less than ~~about~~ 17 wt.% of the quaternary onium mixture, and wherein the fatty acids corresponding to the esters in the diester quaternary ammonium compound and the additional quaternary ammonium compound have a degree of unsaturation such that the iodine value is from about 40 to about 60.

18. The organoclay composition of claim 10, wherein the fatty acids corresponding to the esters of the diester quaternary ammonium compound and the additional quaternary ammonium have a degree of unsaturation such that the iodine value is from about 45 to about 58.

19. The organoclay composition of claim 10, wherein the smectite is selected from the group consisting of hectorite, montmorillonite, bentonite, beidelite, saponite, stevensite and mixtures thereof.

20. The organoclay composition of claim 19, wherein the smectite comprises hectorite.

31. A method for preparing a nanocomposite comprising:

contacting a smectite clay with a quaternary onium compound mixture comprising a diester quaternary ammonium compound mixed with an additional quaternary ammonium compound, wherein the additional quaternary ammonium compound comprises a triester quaternary ammonium compound, a monoester quaternary ammonium compound, or mixtures thereof; and

intermixing an organoclay with a polymer matrix.

32. The nanocomposite of claim 31, wherein the diester quaternary ammonium compound comprises greater than ~~about~~ 55 wt.% of the quaternary onium compound mixture.

33. The nanocomposite of claim 31, wherein the additional quaternary ammonium compound is a triester quaternary ammonium compound and wherein the triester quaternary ammonium compound comprises less than ~~about 25 wt.% of the~~ quaternary onium compound mixture.

35. The nanocomposite of claim 31, wherein the fatty acids corresponding to the esters of the diester quaternary ammonium compound and the additional quaternary ammonium compound have a degree of unsaturation such that the iodine value is from about 20 to about 90.

36. The nanocomposite of claim 31, wherein the additional quaternary ammonium compound is a triester quaternary ammonium compound, and wherein the diester quaternary ammonium compound comprises greater than ~~about~~ 60 wt.% of the quaternary onium mixture, the triester quaternary ammonium compound comprises less than ~~about~~ 20 wt.% of the quaternary onium mixture, and wherein the fatty acids corresponding to the esters in the diester quaternary ammonium compound and the additional quaternary ammonium compound have a degree of unsaturation such that the iodine value is from about 30 to about 70.

37. The nanocomposite of claim 31, wherein the additional quaternary ammonium compound is a triester quaternary ammonium compound, and wherein the diester quaternary ammonium compound comprises greater than ~~about~~ 62 wt.% of the quaternary onium mixture, the triester quaternary ammonium compound comprises less than ~~about~~ 17 wt.% of the quaternary onium mixture, and wherein the fatty acids corresponding to the esters in the diester quaternary ammonium compound and the additional quaternary ammonium compound have a degree of unsaturation such that the iodine value is from about 40 to about 60.

38. The nanocomposite of claim 31, wherein the additional quaternary ammonium compound is a triester quaternary ammonium compound, and wherein the diester quaternary ammonium compound comprises greater than ~~about~~ 62 wt.% of the quaternary onium mixture, the triester quaternary ammonium compound comprises less than ~~about~~ 17 wt.% of the quaternary onium mixture, and wherein the fatty acids corresponding to the esters in the diester quaternary ammonium compound and the additional quaternary ammonium compound have a degree of unsaturation such that the iodine value is from about 48 to about 58.

39. The nanocomposite of claim 31, wherein the smectite clay is further subjected to a shearing treatment.

40. The nanocomposite of claim 31, wherein the organoclay is further subjected to shearing.

41. The method of claim 31, wherein intermixing the organoclay with the polymer matrix further comprises extruding the organoclay with the polymer matrix.

45. The nanocomposite of claim 1, wherein the diester quaternary ammonium compound, triester quaternary ammonium compound, and monoester quaternary ammonium compound, are the reaction products of C_{12}-C_{22} fatty acids or the hydrogenation products thereof, or a mixture of such acids, with an alkanolamine in the presence of an acid catalyst wherein the ratio of fatty acids to alkanolamine is from about 1.40 to 2.0.

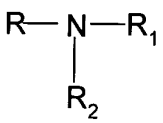
46. The organoclay of claim 10, wherein the diester quaternary ammonium compound, triester quaternary ammonium compound, and monoester quaternary ammonium compound, are the reaction products of C_{12}-C_{22} fatty acids or the hydrogenation products thereof, or a mixture of such acids, with an alkanolamine in the presence of an acid catalyst wherein the ratio of fatty acids to alkanolamine is from about 1.40 to 2.0.

47. The nanocomposite of claim 31, wherein the diester quaternary ammonium compound, triester quaternary ammonium compound, and monoester quaternary ammonium compound, are the reaction products of C_{12}-C_{22} fatty acids or the hydrogenation products thereof, or a mixture of

such acids, with an alkanolamine in the presence of an acid catalyst wherein the ratio of fatty acids to alkanolamine is from about 1.40 to 2.0.

48. A nanocomposite comprising an organoclay which has been exfoliated into a polymer matrix, the organoclay being the reaction product of a smectite clay with a quaternary ammonium component, wherein the quaternary ammonium component is derived from a process comprising:

mixing at a temperature of about 70 °C a C_{12}-C_{22} fatty acid or mixture of fatty acids having an iodine value of from about 3 to about 90, with an alkanolamine of the formula:



wherein R, R_1 and R_2 are independently selected from C_2-C_6 hydroxyalkyl groups, and wherein the molar ratio of the fatty acid to the alkanolamine is from about 1.4 to about 2.0,

increasing the temperature of the mixture of the fatty acid and the alkanolamine from about 70 °C to a range of from about 170 °C to about 250 °C, wherein the rate of temperature increase is maintained at an average rate of greater than about 0.4 °C per minute to produce a mixture of about 55 wt % of a diester compound and less than ~~about~~ 25 wt % of a triester compound; and

alkylating the produced diester and triester compounds to form the quaternary ammonium component.

49. The nanocomposite of claim 48, wherein the rate of temperature increase is maintained at an average rate greater than ~~about~~ 0.8 °C per minute.

50. The nanocomposite of claim 48, wherein the fatty acid is a C_{16}-C_{22} fatty acid having an iodine value of from about 40 to 60.

51. The nanocomposite of claim 48, wherein the fatty acid is a C_{16}-C_{22} fatty acid having an iodine value of from about 45 to 55.

52. The nanocomposite of claim 48, wherein the fatty acid is derived from tallow, soy, palm, palm kernel, rape seed, canola, tall oil, lard or mixtures thereof.

53. The nanocomposite of claim 48, wherein the alkanolamine is selected from the group consisting of triethanolamine, propanol diethanolamine, ethanol diisopropanolamine, triisopropanol amine, diethanolisopropanol amine, ethanoldiisobutanolamine, diethanolisobutanolamine and mixtures thereof.

54. The nanocomposite of claim 48, wherein the molar ratio of the fatty acid to the alkanolamine is in the range of from about 1.60 to 1.90.

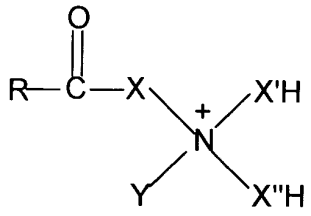
55. The nanocomposite of claim 48, wherein the molar ratio of the fatty acid to the alkanolamine is in the range of from about 1.68 to 1.72.

56. The nanocomposite of claim 48, wherein the fatty acid has less than ~~about~~ 10% trans isomer.

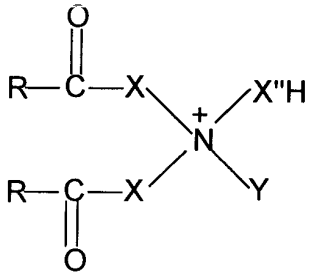
57. The nanocomposite of claim 48, wherein the alkylating agent is selected from the group consisting of methyl chloride, benzyl chloride, ethyl chloride, diethyl sulfate, dimethyl carbonate, trimethyl phosphate, dimethyl sulfate and mixtures thereof.

58. A nanocomposite comprising an organoclay which has been exfoliated into a polymer matrix, the organoclay being the reaction product of a smectite clay with a quaternary ammonium component, the quaternary ammonium component comprising a monoester

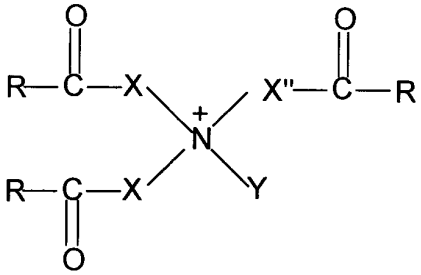
compound of formula (I), a diester compound of formula (II), and a triester compound of formula (III):



Z^- I)



Z^- II)

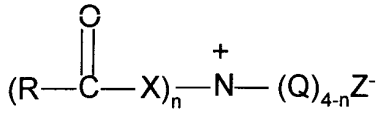


Z^- III)

wherein X, X' and X'' are the same or different and are selected from straight or branched chain, oxyalkylene or polyoxyalkylene groups having from 2-6 carbon atoms where the oxyalkylene units number from about 1-10, each R group is individually selected from straight or branched chain alkyl or alkylene groups having from 11 to 23 carbon atoms, Y is and alkylphenyl group or a straight or branched chain C_1 to C_6 alkyl or alkylene group; and Z- represents a halogen or sulfate;

wherein the diester compound comprises greater than ~~about~~ 55 wt.% of the quaternary ammonium component and wherein the triester compound comprises less than ~~about~~ 25 wt.% of the quaternary ammonium component.

59. A nanocomposite comprising an organoclay which has been exfoliated into a polymer matrix, the organoclay being the reaction product of a smectite clay with a quaternary ammonium component, the quaternary ammonium component comprising one or more compounds having the general formula (IV):



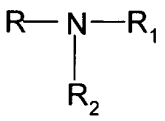
wherein n is an integer from 1 to 2, R is a C_5 to C_{23} straight or branched chain alkyl or alkylene group, each X can be the same or different and is selected from straight or branched chain oxyalkylene or polyoxyalkylene groups having from 2-6 carbon atoms; each Q can be the same or different and is selected from a oxyalkylene or polyoxyalkylene group, or straight or branched chain alkyl, alkylene, alkyl phenyl, hydroxyalkyl, or hydroxyalkylene group, where at least one of said Q groups is a C_2 to C_6 linear or branched chain oxyalkylene or polyoxyalkylene capped with a C_1 to C_6 alkyl, or an alkyl phenyl group; and Z^- is a halogen or sulfate.

63. The nanocomposite of claim 59, wherein the quaternary ammonium component comprises a diester quaternary ammonium compound and a monoester quaternary ammonium compound, and wherein the diester quaternary ammonium compound comprises at least about 70% by weight of the quaternary ammonium component.

64. A nanocomposite comprising an organoclay which has been exfoliated into a polymer matrix, the organoclay being the reaction product of a smectite clay with a quaternary

ammonium component, wherein the quaternary ammonium component is derived from a process comprising:

reacting a C_{11}-C_{23} fatty acid or mixture of fatty acids having an iodine value of from about 20 to about 90, with an ether alkanolamine of the formula:



where R is a C_2-C_6 alkyl ether, and each of R_1 and R_2 is independently selected from C_2-C_6 hydroxyalkyl groups, and wherein the molar ratio of the fatty acid to the ether alkanolamine is from about 1.4 to about 2.0; and

alkylating the product of the reaction of the fatty acid with the ether alkanolamine with an alkylating agent to form the quaternary ammonium component.

65. The nanocomposite of claim 64, wherein the fatty acid is a C_{16}-C_{22} fatty acid having an iodine value of from about 40 to 60.

66. The nanocomposite of claim 64, wherein the fatty acid is derived from tallow, soy, palm, palm kernel, rape seed, canola, tall oil, lard or mixtures thereof.

67. The nanocomposite of claim 64, wherein the ether alkanolamine is selected from the group consisting of methoxyethyldiethanolamine, methoxypropyldiethanolamine. methoxybutyldiethanolamine and mixtures thereof.

68. The nanocomposite of claim 64, wherein the molar ratio of fatty acid to ether alkanolamine is in the range of from about 1.60 to about 1.90.

69. The nanocomposite of claim 64, wherein the alkylating agent is selected from the group consisting of methyl chloride, benzyl chloride, ethyl chloride, diethyl sulfate, dimethyl carbonate, trimethyl phosphate, dimethyl sulfate or mixtures thereof.

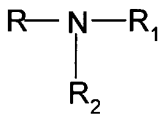
70. The nanocomposite of claim 64, wherein the alkylating agent is methyl chloride.

71. The nanocomposite of claim 64, wherein the process is conducted in the presence of a solvent.

72. The nanocomposite of claim 64, wherein the process is conducted in the presence of a solvent, wherein the solvent is selected from the group consisting of C_1-C_6 alcohols, glycols, fatty acid, mono-, di-, or tri-glycerides, and mixtures thereof.

73. An organoclay comprising the reaction product of a smectite clay with a quaternary ammonium component, wherein the quaternary ammonium component is derived from a process comprising:

mixing at a temperature of about 70 °C a C_{12}-C_{22} fatty acid or mixture of fatty acids having an iodine value of from about 3 to about 90, with an alkanolamine of the formula:



wherein R, R_1 and R_2 are independently selected from C_2-C_6 hydroxyalkyl groups, and wherein the molar ratio of the fatty acid to the alkanolamine is from about 1.4 to about 2.0,

increasing the temperature of the mixture of the fatty acid and the alkanolamine from about 70 °C to a range of from about 170 °C to about 250 °C, wherein the rate of

temperature increase is maintained at an average rate of greater than about 0.4 °C per minute to produce a mixture of about 55 wt % of a diester compound and less than about 25 wt % of a triester compound; and

alkylating the produced diester and triester compounds to form the quaternary ammonium component.

74. The organoclay of claim 73, wherein the rate of temperature increase is maintained at an average rate greater than about 0.8 °C per minute.

75. The organoclay of claim 73, wherein the fatty acid is a C_{16}-C_{22} fatty acid having an iodine value of from about 40 to 60.

76. The organoclay of claim 73, wherein the fatty acid is a C_{16}-C_{22} fatty acid having an iodine value of from about 45 to 55.

77. The organoclay of claim 73, wherein the fatty acid is derived from tallow, soy, palm, palm kernel, rape seed, canola, tall oil, lard or mixtures thereof.

78. The organoclay of claim 73, wherein the alkanolamine is selected from the group consisting of triethanolamine, propanol diethanolamine, ethanol diisopropanolamine, triisopropanol amine, diethanolisopropanol amine, ethanoldiisobutanolamine, diethanolisobutanolamine and mixtures thereof.

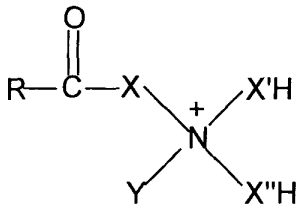
79. The organoclay of claim 73, wherein the molar ratio of the fatty acid to the alkanolamine is in the range of from about 1.60 to 1.90.

80. The organoclay of claim 73, wherein the molar ratio of the fatty acid to the alkanolamine is in the range of from about 1.68 to 1.72.

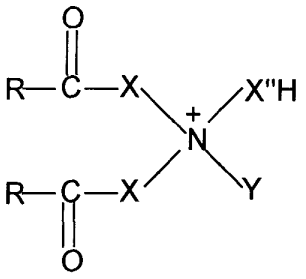
81. The organoclay of claim 73, wherein the fatty acid has less than about 10% trans isomer.

82. The organoclay of claim 73, wherein the alkylating agent is selected from the group consisting of methyl chloride, benzyl chloride, ethyl chloride, diethyl sulfate, dimethyl carbonate, trimethyl phosphate, dimethyl sulfate and mixtures thereof.

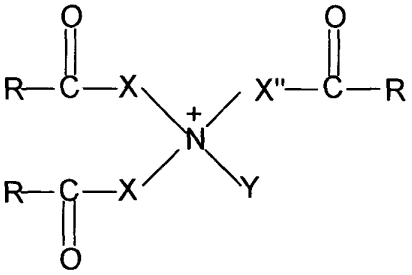
83. An organoclay comprising a reaction product of a smectite clay with a quaternary ammonium component, the quaternary ammonium component comprising a monoester compound of formula (I), a diester compound of formula (II), and a triester compound of formula (III):



Z^- I)



Z^- II)

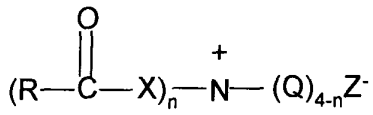


Z^- III)

wherein X, X' and X'' are the same or different and are selected from straight or branched chain oxyalkylene or polyoxyalkylene groups having from 2-6 carbon atoms, where the oxyalkylene units number from about 1-10, each R group is individually selected from straight or branched chain alkyl or alkylene groups having from 11 to 23 carbon atoms, Y is and alkylphenyl group or a straight or branched chain C_1 to C_6 alkyl or alkylene group; and Z- represents a halogen or sulfate;

wherein the diester compound comprises greater than about 55 wt.% of the quaternary ammonium component and wherein the triester compound comprises less than about 25 wt.% of the quaternary ammonium component.

84. An organoclay comprising the reaction product of a smectite clay with a quaternary ammonium component, the quaternary ammonium component comprising one or more compounds having the general formula (IV):



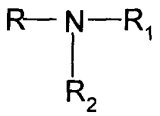
wherein n is an integer from 1 to 2, R is a C_5 to C_{23} straight or branched chain alkyl or alkylene group, each X can be the same or different and is selected from straight or branched chain, oxyalkylene or polyoxyalkylene groups having from 2-6 carbon atoms; each Q can be the same or different and is selected from a oxyalkylene or polyoxyalkylene group, or straight or branched chain alkyl, alkylene, alkyl phenyl, hydroxyalkyl, or hydroxyalkylene group, where at least one of said Q groups is a C_2 to C_6 linear or branched chain oxyalkylene or polyoxyalkylene capped with a C_1 to C_6 alkyl, or an alkyl phenyl group; and Z^- is a halogen or sulfate.

88. The organoclay of claim 84, wherein the quaternary ammonium component comprises a diester quaternary ammonium compound and a monoester quaternary ammonium compound,

and wherein the diester quaternary ammonium compound comprises at least about 70% by weight of the quaternary ammonium component.

89. An organoclay comprising a reaction product of a smectite clay with a quaternary ammonium component, wherein the quaternary ammonium component is derived from a process comprising:

reacting a C_{11}-C_{23} fatty acid or mixture of fatty acids having an iodine value of from about 20 to about 90, with an ether alkanolamine of the formula:



where R is a C_2-C_6 alkyl ether, and each of R_1 and R_2 is independently selected from C_2-C_6 hydroxyalkyl groups, and wherein the molar ratio of the fatty acid to the ether alkanolamine is from about 1.4 to about 2.0; and

alkylating the product of the reaction of the fatty acid with the ether alkanolamine with an alkylating agent to form the quaternary ammonium component.

90. The organoclay of claim 89, wherein the fatty acid is a C_{16}-C_{22} fatty acid having an iodine value of from about 40 to 60.

91. The organoclay of claim 89 wherein, the fatty acid is derived from tallow, soy, palm, palm kernel, rape seed, canola, tall oil, lard or mixtures thereof.

92. The organoclay of claim 89 wherein, the ether alkanolamine is selected from the group consisting of methoxyethyldiethanolamine, methoxypropyldiethanolamine, methoxybutyldiethanolamine and mixtures thereof.

93. The organoclay of claim 89 wherein, the molar ratio of fatty acid to ether alkanolamine is in the range of from about 1.60 to about 1:90.

94. The organoclay of claim 89, wherein the alkylating agent is selected from the group consisting of methyl chloride, benzyl chloride, ethyl chloride, diethyl sulfate, dimethyl carbonate, trimethyl phosphate, dimethyl sulfate or mixtures thereof.

95. The organoclay of claim 89, wherein the alkylating agent is methyl chloride.

96. The organoclay of claim 89, wherein the process is conducted in the presence of a solvent.

97. The organoclay of claim 89, wherein the process is conducted in the presence of a solvent, wherein the solvent is selected from the group consisting of C_1-C_6 alcohols, glycols, fatty acid, mono-, di-, or tri-glycerides, and mixtures thereof.

98. The nanocomposite of claim 1, wherein the additional quaternary ammonium compound is a triester quaternary ammonium compound, and wherein the diester quaternary ammonium compound comprises greater than about 60 wt% of the quaternary onium mixture, the triester quaternary ammonium compound comprises less than about 20 wt% of the quaternary onium mixture, and wherein the fatty acids corresponding to the esters in the diester quaternary ammonium compound and the additional quaternary ammonium compound have a degree of unsaturation such that the iodine value is from about 30 to about 70.

99. The nanocomposite of claim 1, wherein the additional quaternary ammonium compound is a triester quaternary ammonium compound, and wherein the diester quaternary ammonium compound comprises greater than about 62 wt% of the quaternary onium mixture, the triester quaternary ammonium compound comprises less than about 17 wt% of the quaternary onium mixture, and wherein the fatty acids corresponding to the esters in the diester quaternary ammonium compound and the additional quaternary ammonium compound have a degree of unsaturation such that the iodine value is from about 40 to about 60.

100. The nanocomposite of claim 1, wherein the additional quaternary ammonium compound is a triester quaternary ammonium compound, and wherein the diester quaternary ammonium compound comprises greater than about 62 wt% of the quaternary onium mixture, the triester quaternary ammonium compound comprises less than about 17 wt% of the quaternary onium mixture, and wherein the fatty acids corresponding to the esters in the diester quaternary ammonium compound and the additional quaternary ammonium compound have a degree of unsaturation such that the iodine value is from about 45 to about 58.

101. The organoclay composition of claim 12, wherein the additional quaternary ammonium compound is a triester quaternary ammonium compound and wherein the triester quaternary ammonium compound comprises less than about 25 wt% of the quaternary onium compound mixture.

102. The organoclay composition of claim 10, wherein the fatty acids corresponding to the esters in the diester quaternary ammonium compound and the additional quaternary ammonium compound have a degree of unsaturation such that the iodine value is from about 20 to about 90.

103. The organoclay composition of claim 10, wherein the additional quaternary ammonium compound is a triester quaternary ammonium compound, and wherein the diester quaternary ammonium compound comprises greater than about 60 wt% of the quaternary onium mixture, the triester quaternary ammonium compound comprises less than about 20 wt% of the quaternary onium mixture, and wherein the fatty acids corresponding to the esters in the diester quaternary ammonium compound and the additional quaternary ammonium compound have a degree of unsaturation such that the iodine value is from about 30 to about 70.

104. The organoclay composition of claim 10, wherein the additional quaternary ammonium compound is a triester quaternary ammonium compound, and wherein the diester quaternary ammonium compound comprises greater than about 62 wt% of the quaternary onium mixture, the triester quaternary ammonium compound comprises less than about 17 wt% of the quaternary onium mixture, and wherein the fatty acids corresponding to the esters in the diester quaternary

ammonium compound and the additional quaternary ammonium compound have a degree of unsaturation such that the iodine value is from about 40 to about 60.

105. The organoclay composition of claim 10, wherein the fatty acids corresponding to the esters in the diester quaternary ammonium compound and the additional quaternary ammonium compound have a degree of unsaturation such that the iodine value is from about 45 to about 58.

106. The method of claim 31, wherein the diester quaternary ammonium compound is present as greater than 55 wt% of the quaternary onium compound mixture.

107. The method of claim 31, wherein the additional quaternary ammonium compound is a triester quaternary ammonium compound and wherein the triester quaternary ammonium compound comprises less than about 25 wt% of the quaternary onium compound mixture.

108. The method of claim 31, wherein the fatty acids corresponding to the esters in the diester quaternary ammonium compound and the additional quaternary ammonium compound have a degree of unsaturation such that the iodine value is from about 20 to about 90.

109. The method of claim 31, wherein the additional quaternary ammonium compound is a triester quaternary ammonium compound, and wherein the diester quaternary ammonium compound comprises greater than about 60 wt% of the quaternary onium mixture, the triester quaternary ammonium compound comprises less than about 20 wt% of the quaternary onium mixture, and wherein the fatty acids corresponding to the esters in the diester quaternary ammonium compound and the additional quaternary ammonium compound have a degree of unsaturation such that the iodine value is from about 30 to about 70.

110. The method of claim 31, wherein the additional quaternary ammonium compound is a triester quaternary ammonium compound, and wherein the diester quaternary ammonium compound comprises greater than about 62 wt% of the quaternary onium mixture, the triester quaternary ammonium compound comprises less than about 17 wt% of the quaternary onium mixture, and wherein the fatty acids corresponding to the esters in the diester quaternary

ammonium compound and the additional quaternary ammonium compound have a degree of unsaturation such that the iodine value is from about 40 to about 60.

111. The method of claim 31, wherein the additional quaternary ammonium compound is a triester quaternary ammonium compound, and wherein the diester quaternary ammonium compound comprises greater than about 62 wt% of the quaternary onium mixture, the triester quaternary ammonium compound comprises less than about 17 wt% of the quaternary onium mixture, and wherein the fatty acids corresponding to the esters in the diester quaternary ammonium compound and the additional quaternary ammonium compound have a degree of unsaturation such that the iodine value is from about 45 to about 58.

112. The nanocomposite of claim 64, wherein the fatty acid has less than about 20% trans isomer.

113. The nanocomposite of claim 64, wherein the alkyl ether is selected from a group consisting of, methoxyethyl ether, methoxypropyl ether, methoxybutyl ether and mixtures thereof.

114. The nanocomposite of claim 64, wherein the hydroxyalkyl group is selected from a group consisting of ethanol, propanol, isopropanol, isobutanol and mixtures thereof.

115. The organoclay of claim 84, wherein the alkyl ether is selected from a group consisting of, methoxyethyl ether, methoxypropyl ether, methoxybutyl ether and mixtures thereof.

116. The organoclay of claim 84, wherein the fatty acid has less than about 20% trans isomer.

117. The organoclay of claim 84, wherein the hydroxyalkyl group is selected from a group consisting of ethanol, propanol, isopropanol, isobutanol and mixtures thereof.